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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,947	05/29/2001	Alan John Kingsman	674523-2006.1	7750

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EXAMINER	
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ART UNIT	PAPER NUMBER
1632	

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13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/867,947	KINGSMAN ET AL.	
	Examiner	Art Unit	
	Dave T Nguyen	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-12,15-18 and 20-24* is/are pending in the application.

4a) Of the above claim(s) *15 and 23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-12,16-18,20-22 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/238,356* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6 & 10* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Election/Restriction

Applicant's election with traverse of the claimed invention of Group II claims, now amended claims 9-12, 16-18, 20-22, and 24 in Paper No. 12 is acknowledged.

The traversal is mainly that the invention of claims 15 and 23 should be rejoined to the elected claimed invention of Group II for examination, that there is not a serious undue burden to examine the two inventions, and that the two inventions are embraced by same class and subclass. The traversal is not found persuasive because the fact that the same class and subclass are classifiable for the two distinct inventions does not necessarily lead to an non-undue burden for the examiner to consider prior art and examine for patentability. For example, an invention, drawn to a hybrid vector comprising not only a pox virus but also a derivative of a pox virus vector and a derivative of a retrovirus vector, which is distinct structurally and functionally from a non-primate lentiviral vector, for example, would result in a distinct search and/or consideration of prior art/patentability. Such distinct search and/or consideration of prior art/patentability would lead to a serious undue burden upon the examiner to examine the two claimed inventions.

Thus, the restriction remains proper, and thus, made final.

Claims 15 and 23 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected claimed invention.

Elected claims 9-12, 16-18, 20-22, and 24 are pending for examination.

The specification is objected because of the following informalities:

The cross-reference information as to the as-filed application's claim of priority to the parent case 09/238,356 must be updated to reflect that the parent case has been issued as US Pat No. 6,312,683.

On page 48 of the specification, the last sentence written on the page appears to be incomplete, particularly there is a blank space thereafter and immediately before a new section under the heading "Primers". Clarification is requested.

Sequence Rules 1.821

The specification is objected under Sequence Rules 1.821 because the specification does not conform to the requirements of 37 CFR 1.821 because the specification contain DNA sequences (pp. 34, 35, 37, 49, 50, 53, 57, 58, 60, and Figures containing DNA sequences, for example) for which there is no indicated SEQ ID NO:__ identifier for the DNA sequences. Additionally, it is often convenient to refer to DNA sequences in any of the disclosed figures by SEQ ID NO: identifier. It appears that there is both the paper copy of a Sequence listing and computer readable file of the Sequence listing have bee submitted and entered. However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth above. Appropriate correction is required.
The specification is objected because the specification does not appear to incorporate suggestions from the US PTO for filing a US filed application. This US filed application does not contain appropriate headings such as FIELD OF INVENTION, BACKGROUND OF INVENTION, SUMMARY OF INVENTION, BRIEF DESCRIPTION OF THE DRAWING. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9-12, 16-18, 20-22, and 24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention drawn specifically to a genus of unspecified "components" of equine lentiviruses.

The claims encompass a genus of unspecified components from an equine lentivirus and/or a genus of retroviral vectors derived from a non-primate lentivirus genome. The term "equine lentivirus" when read within the reasonably broadest meaning and the context of the as-filed specification, would embrace a number of equine lentiviruses, which are not necessarily limited to the equine infectious

anemia virus (EIAV). A search of the prior art and a review of the as-filed specification (page 6, second full par.) appear to indicate that only EIAV has been isolated and sequenced. The "retroviral vector derived from" is reasonably interpreted as embracing any variant of a non-primate lentivirus genome, which lacks the *tat* gene but includes the leader sequences between the end of the 5' LTR and the ATG of *gag*.

Thus, while the specification and the prior art of record provides sufficient description of non-primate lentiviral vectors and/or particles obtained from the genome of a feline immunodeficiency virus (FIV), a bovine immunodeficiency virus (BIV), a caprine arthritis encephalitis virus (CAEV), a Maedi visna virus (MVV) or an equine infectious anaemia virus (EIAV), each of the non-primate lentiviral vectors and/or particles must at minimum contain *cis*-regulatory sequences required for the lentiviral transcription such as the 5' and 3' leader sequences (see the specification, page 4, first full paragraph), packaging sequences which include a truncated functional *gag* coding sequence (see the specification, Example 7), and an expression cassette containing a promoter operably linked to a gene of interest, the specification and the general knowledge in the prior art does not provide sufficient description of a representative number of derivatives as claimed or even equine lentiviruses other than EIAV. An adequate written description of the invention defined by the claims, *e.g.* derivatives of non-primate lentiviruses and a subgenus of equine lentiviruses, wherein any and/or components are isolated therefrom, requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is the knowledge in the prior art and/or a description as to the availability of a representative number of species of equine lentiviruses and/or components isolated

therefrom. It is not sufficient to have one single species of EIAV solely by its principal biological property, i.e.,C-type viruses or lentiviral classification, packaging property, *gag* function, or RRE, because disclosure of no more than that, as in the instant case, is simply a wish to know the identity of any or all other equine virus vectors, and/or other regulatory lentiviral sequences and/or other lentiviral coding sequences as encompassed by the claimed invention. It is not apparent to one skilled in the art that on the basis of the written description of this instant application and the knowledge of the prior art, a representative number of equine viruses and components thereof, are readily available for practice the claimed invention. In addition, a nucleic acid sequence and/or protein encoding a particular equine lentivirus determines the protein' s structural, and functional properties, and a predictability of a representative number of sequences of "components" that may retain similar functions to that of the EIAV vector, for example, requires a knowledge of and description with regard to which amino acids in the protein' s sequence and/or nucleotides in the DNA, if any, are tolerant of modification and which are conserved (*i.e.,* expectedly intolerant to modification), and detailed knowledge of the ways in which a protein' s structure relates to its functional usefulness (Ngo *et al.,* in The Protein Folding Problem and Tertiary Structure Prediction, 1994, Merz *et al.,* (ed.), Birkhauser, Boston, MA, pp. 492-495). In addition, claiming all DNA's that achieve a result without defining what means will do so is not in compliance with the written description requirement. Rather, it is an attempt to preempt the future before it has arrived. (See *Fiers v. Revel*, 25 USPQ2d 1601 (CA FC 1993) and *Regents of the Univ. Calif. v. Eli Lilly & Co.*, 43 USPQ2d 1398 (CA FC, 1997)). In view of the

reasons set forth above, one skilled in the art at the time the invention was made would not have recognized that applicant was in possession of the claimed genus.

Claims 9-12, 16-18, 20-22, and 24 are also rejected under 35 U.S.C. 112, first paragraph because the specification is only enabling for:

1/ A non-primate lentiviral vector comprising a non-primate lentiviral genome, which comprises regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein, and a NOI coding sequence, wherein the genome lacks the *tat* gene but includes the leader sequences between the end of the 5' LTR and the ATG of *gag* (proposed amended claim for the pending claim 9);

2/ The non-primate lentiviral vector of claim 9, wherein the non-primate lentiviral genome is obtained from EIAV (proposed amended claim for the pending claim 12);

3/ A non-primate lentiviral particle comprising a *gag-pol* coding sequence, and a non-primate lentiviral genome, which genome comprises regulatory sequences of both the 5' LTR and 3' LTR, packaging sequences comprising a nucleic acid coding for a functional *gag* protein, and a NOI coding sequence, wherein the genome lacks the *tat* gene but includes the leader sequences between the end of the 5' LTR and the ATG of *gag* (proposed amended claim for the pending claim 16);

4/ An isolated cell transfected or transduced with the non-primate lentiviral particle of 3/ (proposed amended claim for the pending claim 18);

5/ A delivery system comprising the non-primate lentiviral vector of 1/ and a

pharmaceutically acceptable carrier.

6/ A retroviral production system comprising the non-primate lentiviral vector of 1/, a non-primate lentiviral packaging cell, and a *gag-pol* expressing construct (proposed amended claim for the pending claim 24).

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Specifically, since the claimed invention is not supported by a sufficient written description (for possessing of the genus of derivatives as claimed and/or equine lentiviruses and/or components isolated therefrom for the reasons set forth above, one skilled in the art would not known how to use and make the claimed invention so that it would operate as intended without undue experimentation.

In addition to the issue of non-enablement due to the lack of written description, factors to be considered in determining whether a disclosure would require undue experimentation have been summarized in In re Wands, 858 F.2d 731, 8USPQ2d 1400 (Fed. Cir. 1988). They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

As such and when given their broadest reasonable interpretation, the claims are

clearly intended to encompass a variety of species of retroviral particles (non-lentiviruses and non-primate lentiviruses due to the broadest interpretation of the term "derived") that do not necessarily contains a functional *gag* protein or packaging signal, which is essential to the making of replicated lentiviral particles, *e.g.*, see the specification, page 3, third full par.. However, the specification fails to provide an enabling disclosure for the making of "derived" non-primate lentiviral particles other than the EAIV particles. In order to practice the claimed invention, a skilled artisan would turn to the specification and the general knowledge in the prior art for guidance. The state of the prior art indicates the following:

- Packaging of viral RNA into virions or viral particles depends on the presence of *cis* of encapsidation signals of 150 to 450 bps that have been localized to a region downstream of the 5' LTR in the vast majority of retroviruses (Poeschla, US 6,555,107, column 15, lines 37-54);
- The presence of the 5' leader as well as the *gag* region in the defective CAEV (a non-primate lentivirus) genome would allow packaging of these defective RNA molecules (Olsen, US Pat No. 6,521,457 B2);
- A minimum requirement of three vectors including a lentiviral packaging construct expressing functional *gag-pol* proteins is required for producing a recombinant lentiviral particle (Verma *et al.*, US Pat No. 6,013,516, Fig. 1, and column 4, first paragraph; and Kim *et al.*, J. of Virology, 1998, cited in IDS);

- Functional *gag* proteins (p55; or p24, p17, and p15) are essential for formation of the inner core of any retroviral particle including lentiviral particles (the prior art of record as cited in IDS);
- Domains of *gag* proteins including the carboxyl terminal part of the capsid proteins from HIV-1/2, SIV, and FIV are highly conserved and the carboxyl terminal region of the capsid proteins of lentiviruses and C-type retroviruses contains a domain that plays an essential role in the assembly of lentivrial particles (Poblozki *et al.* (Virology, Vol. 193, 2, 981-5, 1993, page 985, column 1); and
- A retroviral including lentiviral nucleotide sequence between the end of the 5' LTR and the *gag* initiation codon is essential for packaging a retroviral viral vector into retroviral particles (prior art cited in IDS).

However, the as-filed specification only provides sufficient guidance and/or evidence demonstration production of a non-primate lentiviral particle comprising a *gag-pol* coding sequence, and a non-primate lentiviral genome, which genome comprises regulatory sequences of both the 5' LTR and 3' LTR, packaging sequences comprising a nucleic acid coding for a functional *gag* protein, and a NOI coding sequence, wherein the genome lacks the *tat* gene but includes the leader sequences between the end of the 5' LTR and the ATG of *gag* . Given the complexities of the nature of lentiviral proteins operated for formation of viral particles, the essential requirement functional *gag-pol* protein including nucleotides downstream from the 350 nucleotide of a *gag* coding sequence of lentiviruses known in the prior art, and the doubts expressed in the

art of record as to the non-*gag* contained EIAV particles among all known non-primate lentiviruses, the skilled artisan would require an undue experimentation to reasonably extrapolate from the disclosure of the EIAV particles to the full scope of the claimed invention, particularly on the basis of applicant's disclosure. With respect to the claims drawn to a non-primate lentiviral production system, it is apparent from either the state of the prior art or the as-filed specification that not only the non-primate lentiviral vector of 1) is required for the system, but also that a *gag-pol* expressing construct together with regulatory/packaging sequences, and a non-primate lentiviral packaging cell are required for the system. Thus, the proposed claim as set forth in item 6) would resolve the issue. In addition, applicant attempts to claim essentially just the non-primate lentivral vector of 1), for example, as a delivery system, however, it is apparent from the state of the prior art of record (Verma) that at least a pharmaceutically acceptable diluent or carrier is required for the delivery system.

In view of the reasons set forth above, it is not apparent how one skilled in the art, with out any undue experimentation, practices the full breadth of the claimed invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112, second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the application regards as his invention.

Claims 1-8, 10-14, and 16-29 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9, and claims dependent there from are indefinite in the recitation of "derived" because it is not apparent as to what is exactly the intended scope of the claims. The claims are attempted to be written wherein the derived claimed retroviral vector is not specified in any breadth. While the claim appears to describe a non-primate lentivirus genome, which lack the *tat* gene but includes the leader sequences....., the genome is not claimed *per se*. As such, the intended metes and bounds of the derived retroviral vector can not be envisioned by a skilled arisan. Also, given the term "derived" encompasses DNA sequences and/or genomic sequences that are not necessarily the same as that of the original non-primate lentiviral genome, it is not apparent whether or not the full scope of the claims encompass retroviral DNA sequences including primate (HIV) lentiviral sequences that give rise to the claimed vector or particle.

Along the same reasoning, claim 12 is indefinite in the recitation of "substantially derived" because the phrase is relative in meanings and the specification does not define as to what is exactly the intended scope of the claims. In claim 18 and claim 23, the phrase "a retroviral vector according to claim 9" and the phrase "in the form of a retroviral vector according to claim 9", respectively, is also indefinite because of the reasons set forth in the immediately preceding paragraph.

In claims 16 and 17, the phrase "a retroviral particle obtainable from the retroviral vector of claim 9" is vague and indefinite because the "obtainable" does not necessarily

mean that the claimed particle comprising the retroviral vector of claim 9, which is the main thrust of the invention, as evidenced by the as-filed specification. Since the claim does not particularly point out that the retroviral particle as claimed must necessarily contain the a non-primate lentiviral vector according to 1) (see the given enabling scope set forth above), it is not apparent as to what are exactly intended for the metes and bounds of the retroviral particle.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

To the extent that claims 1, and 16-29 are readable on a lentiviral and/or a non-primate lentiviral vector that contains no *gag* gene which is employed in a three vector system which separately comprises a *gag-pol* expressing construct and/or a packaging construct that comprises nucleotide sequence between the splice donor site and the *gag* initiation codon of a *gag* coding sequence so as to produce retroviral particles, and that claims 20 and 28 are readable on a method of delivering the vector or particle to a cell *in vitro* and/or *in vivo* for non-therapeutic purposes, the following rejections are applicable.

Claims 9-12, 16-18, 20, 21, 22, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Olsen (US Pat No. 6,521,457 B2).

The main thrust on the invention is the concept of making a non-primate lentiviral expression vector, *e.g.,* EIAV, comprising a non-primate lentiviral genome, which comprises regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein, and a NOI coding

sequence, wherein the genome lacks the *tat* gene but includes the leader sequences between the end of the 5' LTR and the ATG of *gag* (proposed amended claim for the pending claim 9). Olsen teaches a vector production system, EIAV particles, and a delivery system, each of which comprises an EIAV vector that contains at least one defect in at least one encoding an EIAV structural protein, an expression cassette having an NOI coding sequence (abstract). Figures 3 and 4 describe an exemplified EIAV vector that can be used in a delivery system comprising a pharmaceutically acceptable carrier, wherein the vector comprises regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein. As such, the vectors are lacking the *tat* gene. Column 6, lines 45-50 clearly discloses that the *tat* gene can be expressed *in trans* by a gag/.pol expression contruct which is used as one of the main constructs in a EIAV production system. Column 7 (second full par.) provides detailed description of an EIAV expression vector that is used as a NOI delivery vector, which vector at minimum only requires to contain cis-acting sequence elements required to support reverse transcription or replication, a functional *gag* coding sequence, and cloning sites for insertion of cDNAs encoding heterologous genes of interest.

Thus, Olsen anticipates the claims.

Claims 9-12, 16-18, 20, 21, 22, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Kingsman (6,312,682, which has a distinct inventive entity, wherein Susan Kingsman constitutes as an antother).

The main thrust on the invention is the concept of making a non-primate lentiviral expression vector, *e.g.,* EIAV, comprising a non-primate lentiviral genome, which comprises essentially of regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein, and a NOI coding sequence, wherein the genome lacks the *tat* gene but includes the leader sequences between the end of the 5' LTR and the ATG of *gag*. Kingsman teaches a lentiviral vector production system, which embraces non-primate lentiviruses such as FIV, EIAV, BLV, and CEV (column 3, lines 34-50) and/or a delivery system, each of which comprises a non-primate lentiviral vector, *e.g.,* EIAV vector, that contains at least one defect in at least one encoding an EIAV structural protein, an expression cassette having an NOI coding sequence (abstract). Figures 3 and 4 describe an exemplified EIAV vector that can be used in a delivery system comprising a pharmaceutically acceptable carrier, wherein the vector comprises regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein, and wherein the entire production system or delivery system does not contain the *tat* gene of a non-primate lentiviral vector such as EIAV chosen for the making of the production/delivery system, see Figure 1. As such, the vectors are lacking the *tat* gene. Figure 1 discloses that the vector production system must necessarily contain a gag/.pol expression contruct which is used as one of the main constructs in a EIAV production system. Column 4 bridging column 3 discloses that the produced delivery lentiviral vector is mainly use as a delivery vector for delivery, transducing, and/or expressing a coding sequence of a NOI in target cells.

Thus, Kingsman anticipates the claims.

Note that The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned cases, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee is required under 35 U.S.C. 103(c) and 37 CFR 1.78(c) to either show that the conflicting inventions were commonly owned at the time the invention in this application was made or to name the prior inventor of the conflicting subject matter. Failure to comply with this requirement will result in a holding of abandonment of the application. A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

Claims 16-18, 20, 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsen (US Pat No. 6,521,457 B2) taken with Naldini *et al.* (US Pat No. 6,428,953), and Chang (US Pat No. 6,207,455).

To the extent that the claims embrace a non-primate lentiviral particle, transduced/transfecting cell or a retroviral production system comprising the particle as

set forth in 3/ and 4/, the following rejection is applicable.

The teaching of Olsen is applied here as indicated above. Olsen does not teach that the *tat* gene is dispensible during the making or production of the EIAV particles.

However, at the time the invention was made, the concept of making lentiviral vectors in the absence of a functional *tat* gene is well-established in the prior art, as exemplified in Naldini and Chang. Both of Naldini (column 9, lines 55-56, for example) and Chang (column 28 through column 29) do teach that as long as a strong heterologous LTR (CMV-IE-LTR) is employed to increase basal promoter activity, lentiviral replication such as HIV replication can be sustained without Tat.

As such, it would have been obvious for one of ordinary skill in the art to delete the *tat* gene from the EIAV production system as described in Olsen. One of ordinary skill in the art would have motivated to do so because Chang on column 27 teaches that Tat protein has been implicated in the induction of diseases or complication of the immune response and because Naldini teaches on column 7, fourth full par, that *tat* deletion is to prevent a remote possibility of generating replication competent lentiviruses. One would have expected that EIAV can be made without the presence of a functional *tat* as long as a strong constitute promoter is employed to drive expression of essential sequences required for the making of the EIAV particles. The totality of the prior art of record, as exemplified by Chang and Naldini in this rejection, does teach generically that lentiviral particles including both primate and non-primate lentiviral particles can be made without the presence of a functional *tat.*

Thus, the claimed invention as a whole was *prima facie* obvious.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 9-12, 16-18, 20, 21, 22, and 24are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-62 of U.S. Patent No. 6,521,457 B2 in view of Olsen. Although the conflicting claims are not identical, they are not patentably distinct from each other because

Both set of claims embrace a non-primate lentiviral particle comprising a non-primate lentiviral genome, which comprises regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein, and a NOI coding sequence, wherein the genome lacks the *tat* gene. While the patent claims do not teach explicitly that the lentiviral particle includes but includes the leader sequences between the end of the 5' LTR and the ATG of *gag,* such is well-

known in the prior art, as exemplified by Figure 1 of the patent and the disclosure of Olsen. Further, while the patent claims are silent about EIAV, such would constitute as an obvious variant of the patent claims, since the prior art as exemplified by Olsen teaches a vector production system, EIAV particles, and a delivery system, each of which comprises an EIAV vector that contains at least one defect in at least one encoding an EIAV structural protein, an expression cassette having an NOI coding sequence (abstract). Figures 3 and 4 of Olsen also describe an exemplified EIAV vector that can be used in a delivery system comprising a pharmaceutically acceptable carrier, wherein the vector comprises regulatory sequences of both the 5' LTR and 3' LTR, a packaging sequence comprising a nucleic acid coding for a functional *gag* protein. As such, it would have been obvious for one of ordinary skill in the art to have applied the teaching of the patent claims to the making and use of any non-primate lentiviral particle such as EIAV. Thus, both sets of patent claims and examined claims are obvious variants of one another.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Dave Nguyen* whose telephone number is **(703) 305-2024**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Deborah Reynolds*, may be reached at **(703) 305-4051.**

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center number is **(703) 305-7401**.

Any inquiry of a general nature or relating to the status of this application should be directed to the *Group receptionist* whose telephone number is **(703) 308-0196**.

Dave Trong Nguyen
Primary Examiner
Art Unit: 1632

DAVE T. NGUYEN
PRIMARY EXAMINER